

Work Order ID 155385

Thursday, January 12, 2017 3:41:16 PM

155385

Page 1

Item ID: 646.3315

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Blade

Start Date: 1/18/2017 Start Qty: 6.00

6

Cust Item ID:

Required Date: 1/25/2017 Req'd Qty: 6.00

6

Customer:

Reference:

Approvals:

Process Plan:

DAS
21
9-89

Date: JAN 13 2017

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

646.3300

N/C3

100

0.00

100

BAND SAW

Bandsaw

Memo

0.00

Jeaspa Bandsaw

Cut Blank at 2.600"

110

0.09

110

HAAS CNC VERTICAL MACHINING #1

HAAS 1

Memo

0.26

HAAS CNC vertical machine #1

1-Machine per folio FB147

DWG REV: 11/23FOLIO REV: 4A

2- deburr and break all sharp edges except otherwise noted

KNIFE EDGE MUST BE SHARPENED USING STONE, REMOVE ALL
BURRS ON CUTTING EDGE

6 _____ 17-02-05

6 _____ 17-02-06

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

Work Order ID 155385

Thursday, January 12, 2017 3:41:16 PM

155385

Page 2

Item ID: 646.3315

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Blade

Start Date: 1/18/2017 Start Qty: 6.00 ***6***

Cust Item ID:

Required Date: 1/25/2017 Req'd Qty: 6.00 ***6***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC2- Inspect parts off machine FAI/FAIB	0.00							
120						6			
QC	Memo	0.01							
Quality Control									17-02-06
130	QC8- Inspect parts - second check	0.00							
130						6	5		
QC	Memo	0.02							
Quality Control									17/02/06
140	Outsource process - Heat Treat	0.00							
140						6			
Outsource1	Memo	239.99							
Outsource process - Heat Treat	HEAT TREAT AS PER DWG, SEE NOTE #3								
	ISSUE P/O: 35257								

DAS
14
9-89DAS
13
9-89

FEB 09 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
							Lead hand / Supervisor Approval Verification		
							QC / QA Coordinator Approval		
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : _____					

Work Order ID 155385***155385***

Page 3

Thursday, January 12, 2017 3:41:16 PM

Item ID: 646.3315

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Blade

Start Date: 1/18/2017 Start Qty: 6.00

6

Cust Item ID:

Required Date: 1/25/2017 Req'd Qty: 6.00

6

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

Receive & Inspect for Damage & Mat'l Certs

0.00

150

Packaging

Memo

0.02

Packaging

60x Sp1702-23

155

QC5- Inspect part completeness to step on W/O

0.00

155

QC

Memo

0.02

Quality Control

6
DAS
38
9-89
FEB 24 2017

160

Spray Painting per QSI005 4.2

0.00

160

SprayPaint

Memo

0.02

Spray Painting

PRIME AS PER DWG, SEE NOTE #4

PRIMER BATCH: 134615

6
DAS
41
9-89
17-2-26

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

Work Order ID 155385

Thursday, January 12, 2017 3:41:16 PM

155385

Page 4

Item ID: 646.3315

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Blade

Start Date: 1/18/2017 Start Qty: 6.00

6

Cust Item ID:

Required Date: 1/25/2017 Req'd Qty: 6.00

6

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

170

QC14- Inspect Spray Paint

0.00

170

QC

Memo

0.00

Quality Control

DAS
38
9-89
MAR 02 2017

180

Identify as per dwg & Stock Location: CCK100

0.00

180

Packaging

Memo

0.01

Packaging

IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV

6

MAR 04 2017

DAS
6
9-89

190

QC21- Final Inspection - Work Order Release

0.00

190

QC

Memo

0.10

Quality Control

17/3/16

DAS
21
9-89

MAR 03 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
				Completed By					
				Lead hand / Supervisor Approval Verification					
				QC / QA Coordinator Approval					

Root Cause				FAULT CATEGORY			
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____			
Misidentified	☐	Past Due	☐				

Picklist Print

Thursday, January 12, 2017 3:41:15 PM

Page 1

Work Order ID: 155385

155385

Parent Item: 646.3315

646 3315

Parent Item Name: Blade

Start Date: 1/18/2017

Required Date: 1/25/2017

Start Qty: 6.00

Required Qty: 6.00

Comments: IPP REV:A NEW ISSUE 12/11/07 JFS VERIFY BY: JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MSTEEL-A2- B0.500X1.250		Purchased	No			100	f	49.1400	0.217	1.370526			

MSTFFI -A2-B0 500X1 250

AISI A2 TOOL STEEL BAR, 0.500 X 1.250

Location

Loc Qty

Loc Code

MAT010

49.14

M135558

1

M136243

12.14

M136378

12

M136553

24

1.335

17-02-06

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

APICAL
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04765

SHEET 1 OF 1

DWG NO. 646.3300

REV: NC

PREPARED BY J. SOTO

DATE: 12/08/2014

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: UPPER CUTTER ASSY

APPROVED BY:

ENGR

MFG

QC

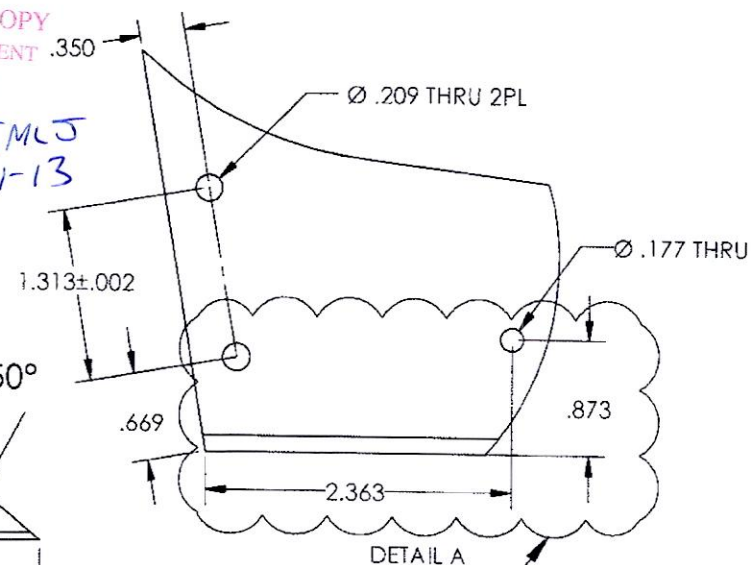
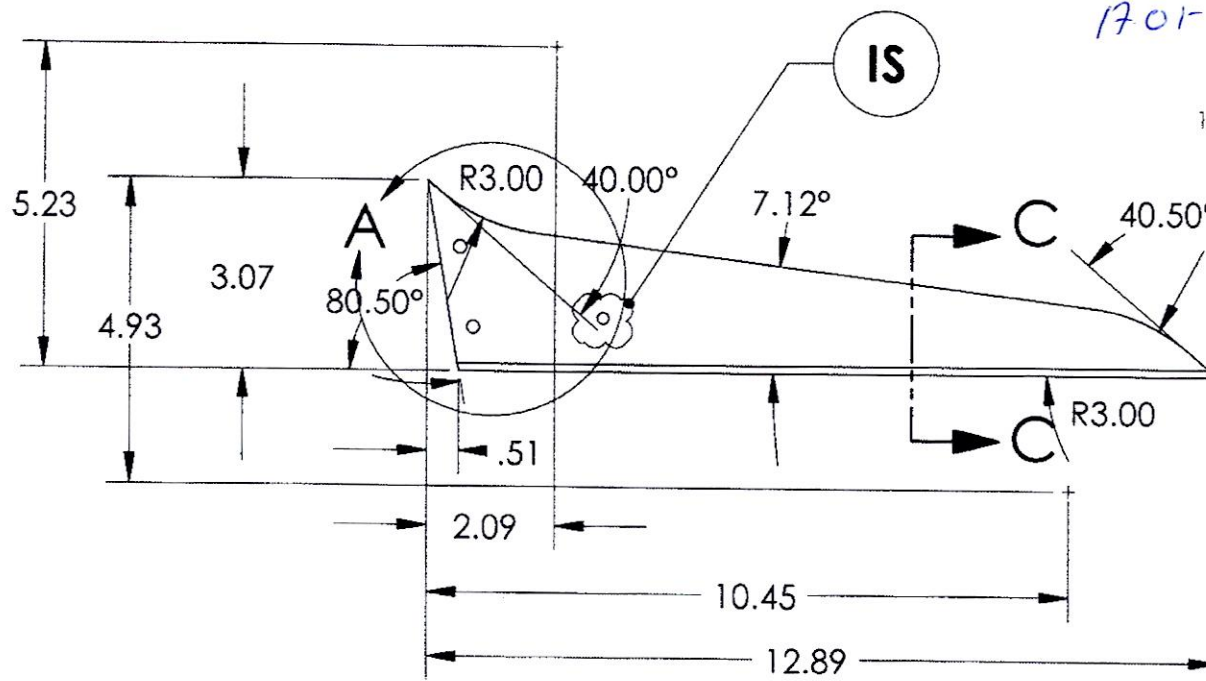
EFF. NEXT ORDER

TRANSACTION CODES (TC):
A-ADD
R-REVISE
C-CREATE
D-DELETE

REASON: ADDED HOLE DIMENSION TO 646.3313.

SHEET 5 IS:

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. ISS 385 MJS
1701-13



IS

DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

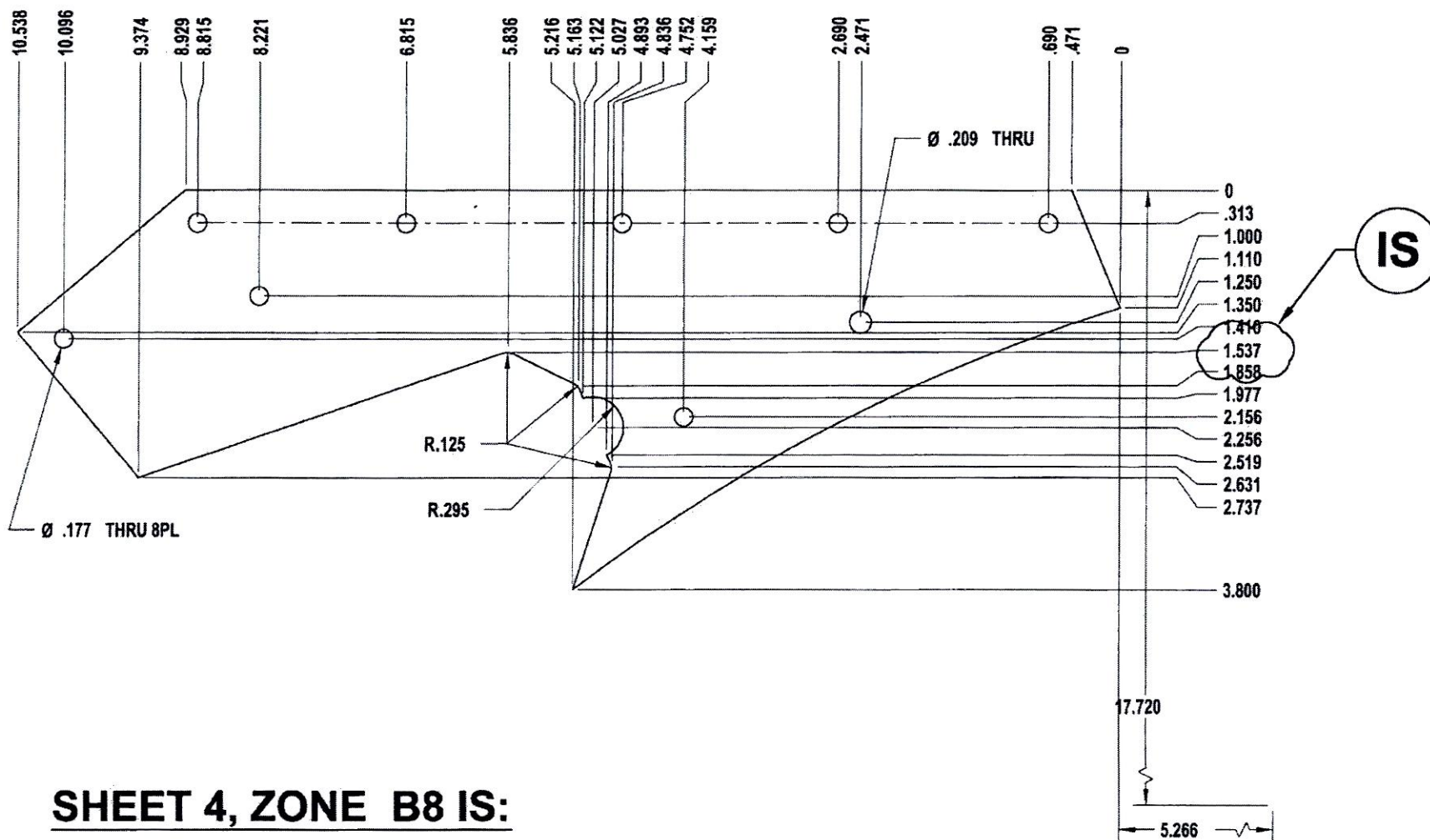
CHANGE CATEGORY

☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED

☐ YES ☒ NO

APICAL INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 03724				SHEET 1 OF 1	
	DWG NO. 646.3300	REV: N/C	PREPARED BY B. PETERS	DATE: 12/05/12	EFFECT ON DWG ☐ INC. ☒ UNINC.	
	DWG TITLE: UPPER CUTTER ASSY					
	APPROVED BY: ENGR <i>[Signature]</i>	MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: NEXT ORDER		
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE	REASON: REVISED ORDINATE DIMENSION.				ECR: D-12-025	

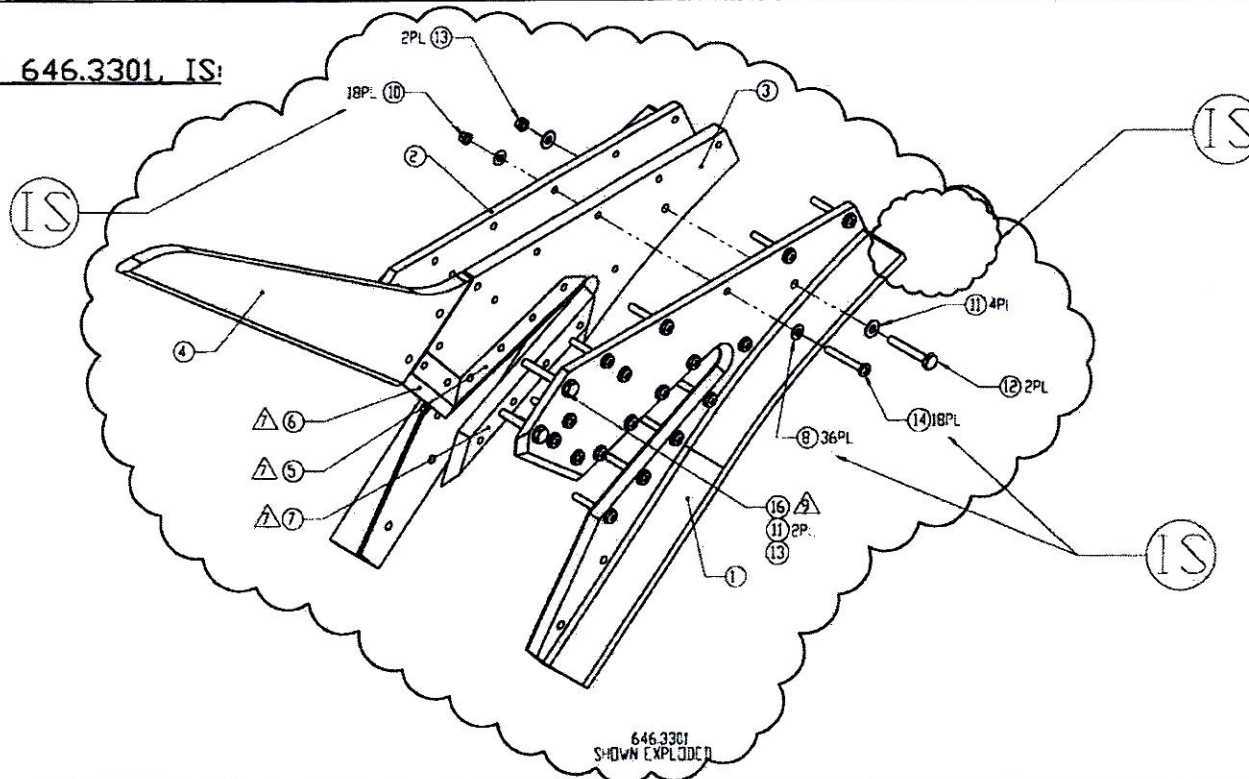


SHEET 4, ZONE B8 IS:

DOCUMENTS EFFECTED:	☐ RFMS ☐ MDL ☐ INSTALL INSTRU ☐ ICA ☐ BOM	CHANGE CATEGORY ☐ MAJOR ☒ MINOR	DER REVIEW REQUIRED ☐ YES ☒ NO
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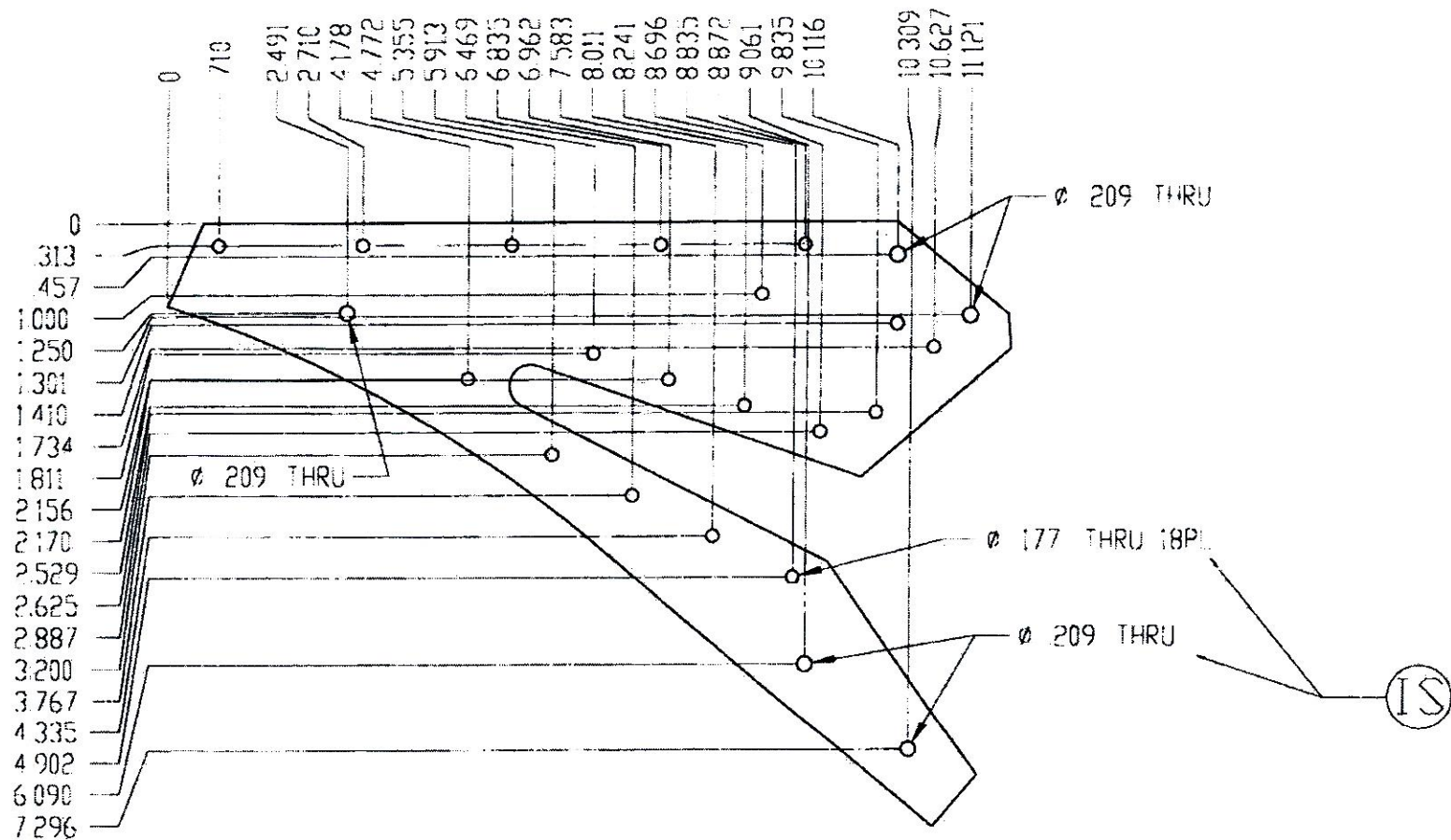
APICAL INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 02196		SHEET 1 OF 2	
	DWG NO. 646.3300	REV: N/C	PREPARED BY S. HUFF	DATE: 01/05/09
	EFFECT ON DWG ☐ INC. ☒ UNINC.			
	DWG TITLE: UPPER CUTTER ASSY			
APPROVED BY: ENGR <i>[Signature]</i>		MFG <i>[Signature]</i>	QC <i>[Signature]</i>	EFF: NEXT ORDER
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE		REASON: REMOVED RIVETS IN FAVOR OF ADDITIONAL SCREWS		

SHEET 1, VIEW 646.3301 IS:



14	R	601.2765	18	SCREW	MS27039-0819
10	R	601.1541	18	LOCKNUT	MS21042L08
9	D	601.2766	3	RIVET	MS20470AD5-18
8	R	601.2764	36	WASHER	NAS1149FN832P
			.3301		
F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION
DOCUMENTS EFFECTED:				CHANGE CATEGORY	DER REVIEW REQUIRED
☐ MDL ☒ INSTALL INSTRUC ☒ ICA ☐ FMS ☒ BOM				☐ MAJOR ☒ MINOR	☐ YES ☒ NO

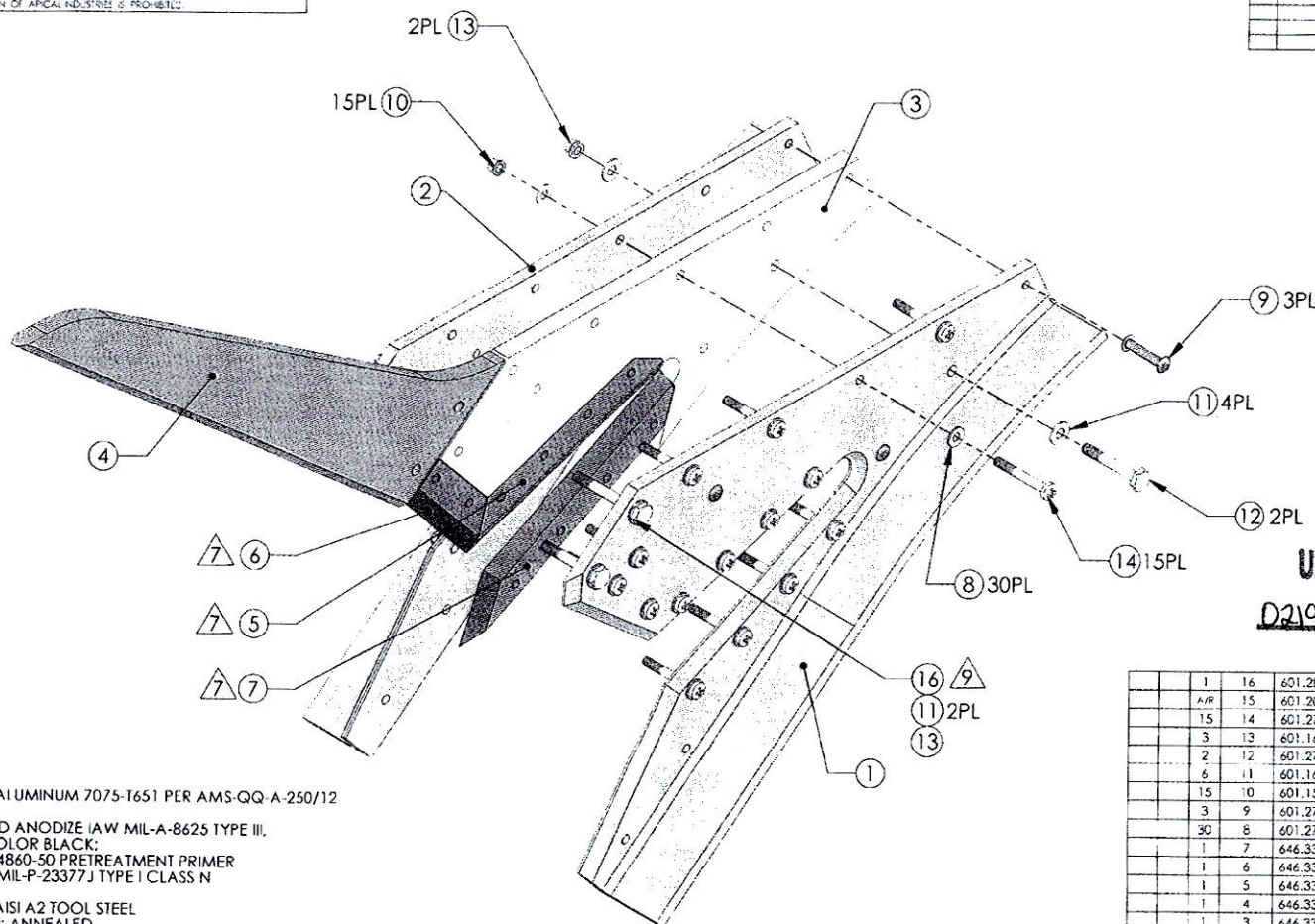
SHEET 3, SECTION VIEW A-A, IS:



F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION
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REV	DESCRIPTION	DATE	APPROVED



UNINCORPORATED ECN(S)

02196, 03724, 04765

NOTES:

- 1 MATERIAL: ALUMINUM 7075-T651 PER AMS-QQ-A-250/12
- 2 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2, COLOR BLACK; CARDINAL 4860-50 PRETREATMENT PRIMER PRIME IAW MIL-P-23377J TYPE I CLASS N
- 3 MATERIAL: AISI A2 TOOL STEEL CONDITION: ANNEALED POST PROCESS: HEAT TREAT TO 58-62 Rc ROCKWELL HARDNESS
- 4 FINISH: PRIME IAW MIL-P-23377J TYPE I CLASS N
- 5 DEBURR AND BREAK ALL SHARP EDGES EXCEPT WHERE OTHERWISE NOTED
- 6 IDENTIFY IAW MPP-120
- 7 APPLY F/N 15 AS REQUIRED TO ALL FAYING SURFACES OF F/N 5, 6 & 7 UPON ASSEMBLY
- 8 CUTTING EDGE INTENDED TO BE SHARP, DO NOT BREAK SHARP EDGE
- 9 INSTALL FASTENER FINGER-TIGHT

646.3301
SHOWN EXPLODED

QTY	1	16	601.2834	BOLT	AN3-144	
	A/R	15	601.2045	RTV, LOCTITE 598		
		15	601.2765	SCREW	M32X3.0X18	
		3	601.1624	LOCKNUT	M32X3.0X18	
		2	601.2763	BOLT	AN2-128	
		6	601.1607	WASHER	M32X3.0X18	
		15	601.1541	LOCKNUT	M32X3.0X18	
		3	601.2766	RIVET	M32X3.0X18	
		30	601.2764	WASHER	M32X3.0X18	
		1	7	646.3316	BLADE	
		1	6	646.3315	BLADE	
		1	5	646.3314	BLADE	
		1	4	646.3313	UPPER GUIDE	
		1	3	646.3312	CENTER PLATE	
		1	2	646.3311	RH HALF	
		1	1	646.3310	LH HALF	
		1	1	646.3301	UPPER CUTTER ASSY	

QTY	FIND #	PART #	DESCRIPTION	MAT'L	SPEC.
			PARTS LIST		
NEXT ASSY (S)			APICAL INDUSTRIES		
646.4000			2608 TEMPLE HEIGHTS DR OCEANSIDE, CA 92056-3512 (760) 724-5300		
			UPPER CUTTER ASSY		
			UNIT COMPARE SPECIFIED		
			DIMENSIONS AND TOLERANCES ARE IN PARENS		
			PLATE DIMENSIONS: 20"		
			DIMENSIONS: 1.660		
			ANGLES: 2°		
			CUTTER NO.		
			UNIT COMPARE SPECIFIED		
			DIMENSIONS AND TOLERANCES ARE IN PARENS		
			PLATE DIMENSIONS: 20"		
			DIMENSIONS: 1.660		
			ANGLES: 2°		
			CUTTER NO.		
			UNIT COMPARE SPECIFIED		
			DIMENSIONS AND TOLERANCES ARE IN PARENS		
			PLATE DIMENSIONS: 20"		
			DIMENSIONS: 1.660		
			ANGLES: 2°		
			CUTTER NO.		
			UNIT COMPARE SPECIFIED		
			DIMENSIONS AND TOLERANCES ARE IN PARENS		
			PLATE DIMENSIONS: 20"		
			DIMENSIONS: 1.660		
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APICAL INDUSTRIES

2608 TEMPLE HEIGHTS DR.
OCEANSIDE, CA. 92056-3512 (760)724-5300

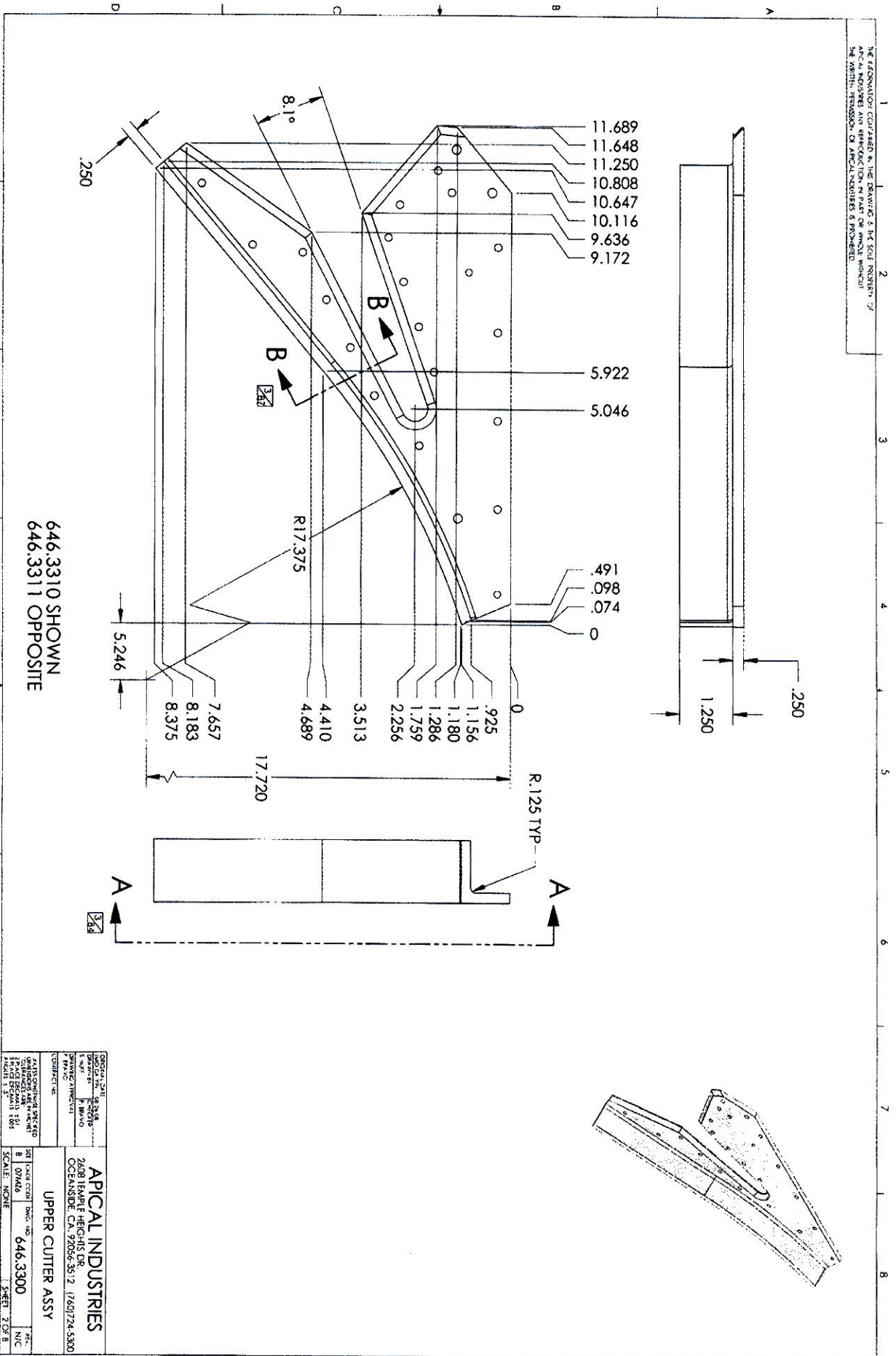
UPPER CUTTER ASSY

646.3300

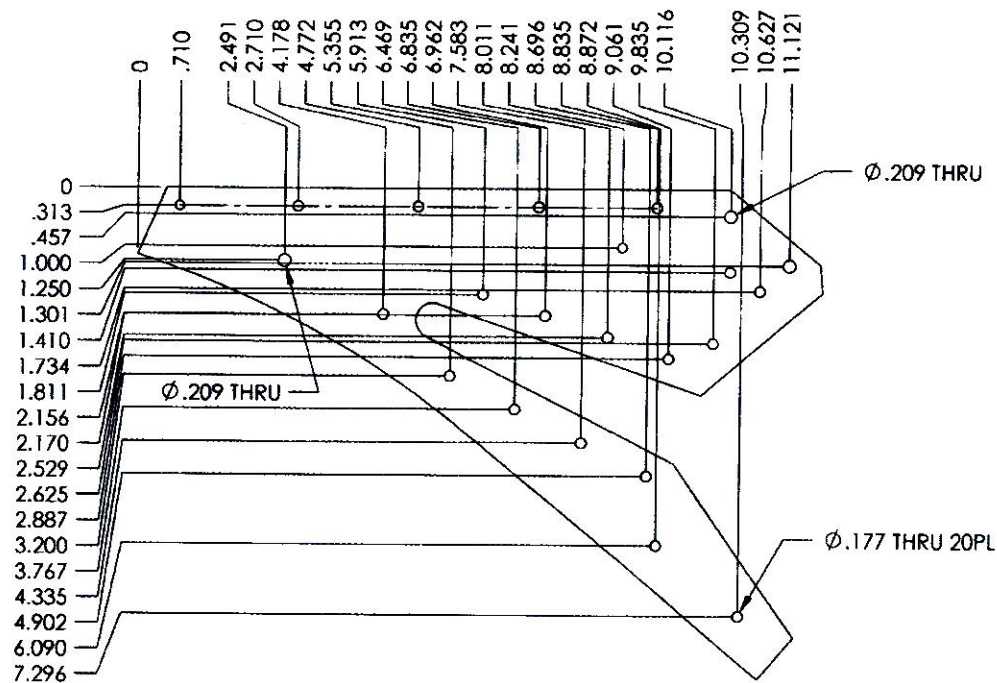
SCALE NONE

SHEET 1 OF 8

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SECTION A-A

SECTION B-B

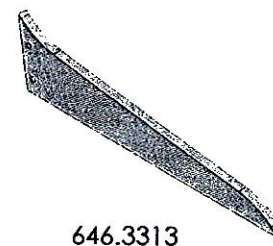
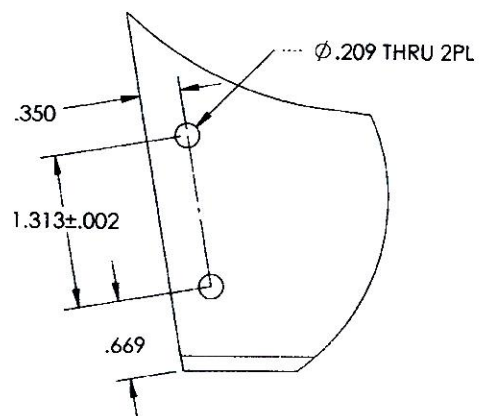
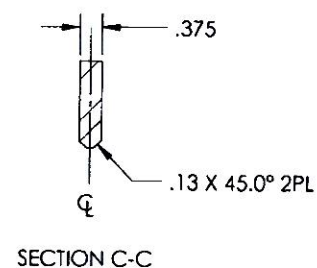
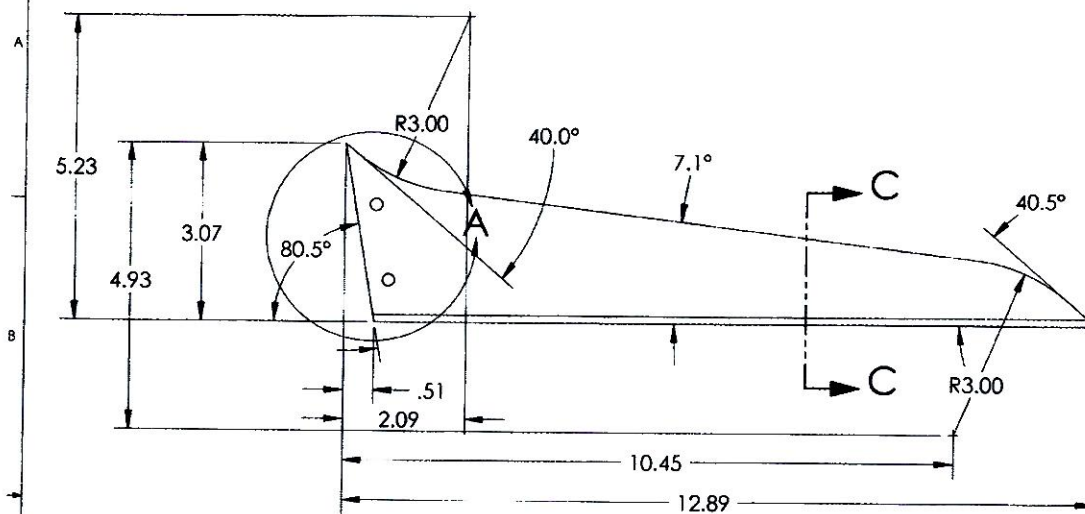
ORIGINAL DATE REV. DATE REV. BY REV. BY REV. BY		APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 724-5300	
CONTRACT NO.		UPPER CUTTER ASSY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1. FRACTIONS DECIMALS IN. 2. FRACTIONS DECIMALS IN. 3. FRACTIONS DECIMALS IN. 4. ANGLES ± .5°		REV. NO. B 07/2025	REV. NO. 646.3300
SCALE: NONE		SHEET: 3 OF 8	

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APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA 92056-3532 (760) 724-5300		ORDER NO. _____ QUOTE NO. _____ DATE _____	
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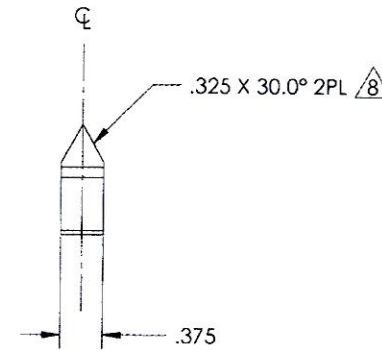
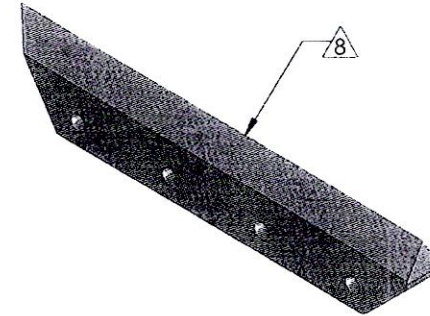
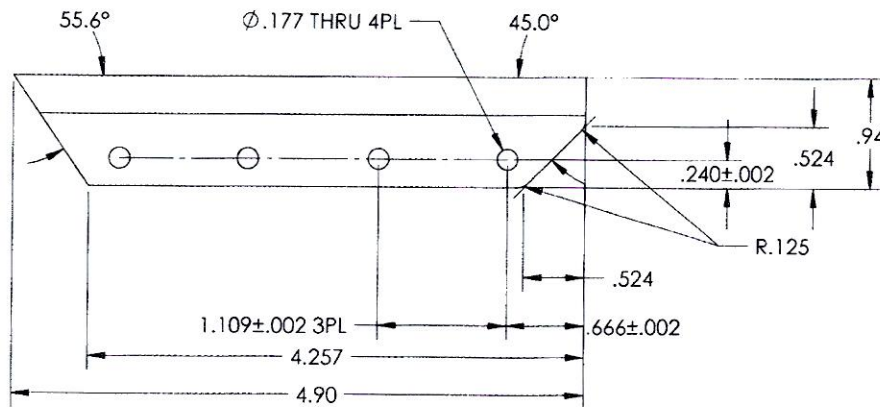
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REV	DESCRIPTION	DATE	APPROVED



ORIGINAL DATE AND DATE DESIGNED BY S. HERR		DESIGNED BY P. MAY NO	
DRAWING APPROVAL J. BRANC CHECKED		APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 724-5300	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .01 3 PLACE DECIMALS ± .005 ANGLES ± .5°		UPPER CUTTER ASSY MAT CODE: B DWG NO: 646.3300 REV: N/C SCALE: NONE SHEET: 5 OF 6	

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REV	DESCRIPTION	DATE	APPROVED

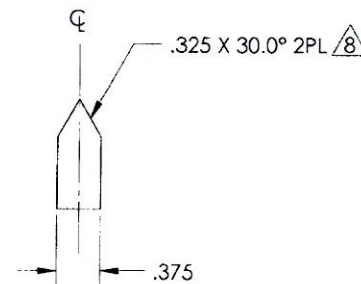
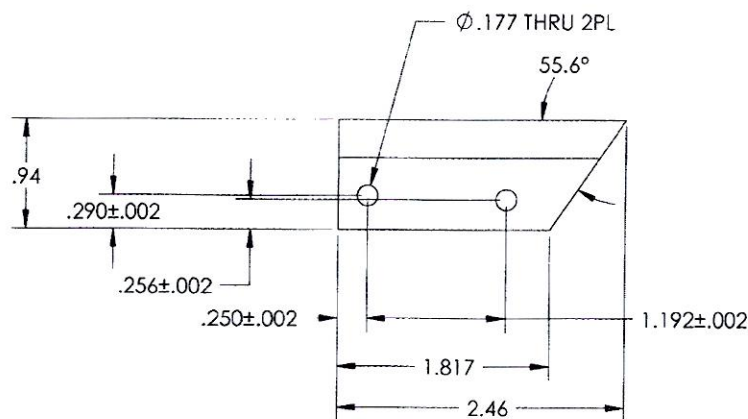
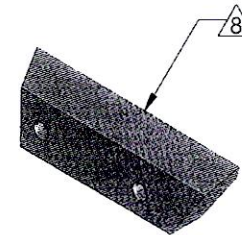


646.3314

ORIGINAL DATE NOV 1988 DRAWN BY: J. HUR S. HUR P. BRAVO DRAWING APPROVAL P. BRAVO DATE CONTRACT NO.		APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA 92056-3512 (760) 724-5300	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1. PLACE DECIMALS < .01 2. PLACE DECIMALS < .005 ANGLES < .5°		UPPER CUTTER ASSY	
101	SCALE CODE: DWG. NO.	646.3300	REV
8	DATE	07/02/88	N/C
SCALE NONE		SHEET 6 OF 8	

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

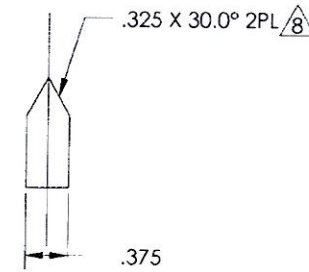
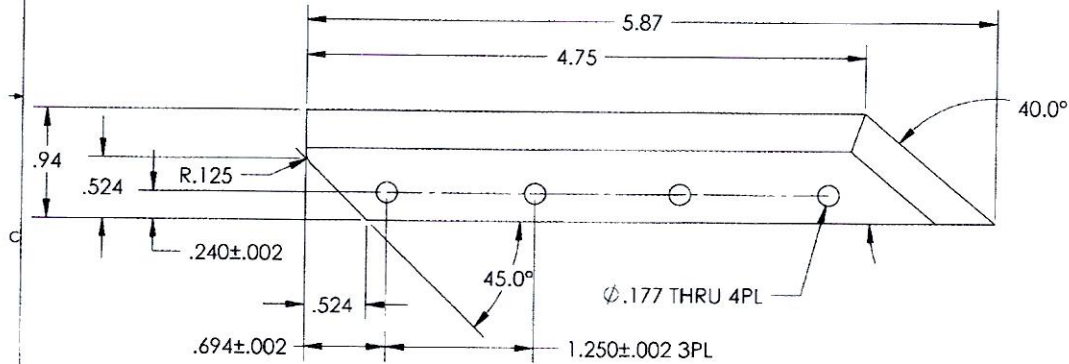
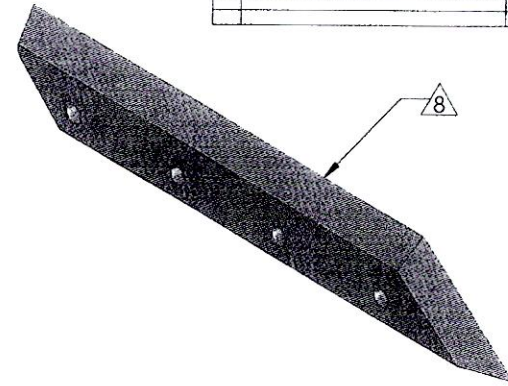


646.3315

ORIGINAL DATE: 08-20-08 DESIGNED BY: J. HUNTER DRAWN BY: J. HUNTER CHECKED BY: J. HUNTER APPROVED BY: J. HUNTER CONTRACT NO: 646.3315		APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 774-5300	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°		PART CODE: 646.3300 REV: N/C	SCALE: NONE SHEET: 7 OF 8

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REV.	DESCRIPTION	DATE	APPROVED



646.3316

ORIGINAL DATE MODIFIED DRAWN BY S. HUI DRAWING APPROVAL P. BRAVO DATE	DESIGNED BY P. BRAVO DATE	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 724-5300
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°	DATE CODE B 07M26	DWG. NO. 646.3300
SCALE: NONE	REV. N/C	SHEET 8 OF 8



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO35257**

Purchase Order Date 2/9/2017

PO Print Date 2/9/2017

Page Number 2 of 3

Order From :
METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

VC-MET004

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name
Vendor Phone 450 473 1884

Ship To Contact
Ship To Phone
Ship Via: FedEx Economy collect
Ship Acct:

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB FCA - (Free Carrier)

Line Total: \$59.00

3	155385	646.3315 BLADE	2/23/2017 Yes 2/23/2017	6.00	\$7.38	\$44.25
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FINISH: HEAT TREAT TO 58-62 RC
ROCKWELL HARDNESS

PART ARE MADE FROM AISI A2 TOOL STEEL

PLEASE NOTE: DETAIL C OF C REQUIRED

2017-02-23

Line Total: \$44.25

4	155368	646.3316 BLADE	2/23/2017 Yes 2/23/2017	6.00	\$7.38	\$44.25
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FINISH: HEAT TREAT TO 58-62 RC
ROCKWELL HARDNESS

PART ARE MADE FROM AISI A2 TOOL STEEL

PLEASE NOTE: DETAIL C OF C REQUIRED

Line Total: \$44.25

Note:

2/9/2017

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL Order	EXPÉDITEUR Shipper ID	BON D'EXPÉDITION Shipper
317043	1	117441

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053



LIVRÉ À /Shipped To

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

COMMANDE DU CLIENT Customer PO	BON DE LIVRAISON DU CLIENT Customer Shipper No.	TYPE DE MATÉRIEL Material Type	DATE DE LA COMMANDE Order Date	TRANSPORTEUR Carrier
35257		A2	2017/2/10	FEDEX

QUANTITÉ Quantity	No. PIÈCE / Part No.	NOM DE LA PIÈCE / Part Name	DESCRIPTION DE LA PIÈCE Part Description	POIDS Weight
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40 646.3013

12,28

(10) 646.3013 155508

(8) 646.3314 155621

(6) 646.3315 155385

(6) 646.3316 155368

(10) 646.9711 155350

SP17-02-23

1 VALISE

TYPE DE CONTENEUR Container Type	# DE CONTENEURS # Of Containers	COMMENTAIRES CONTENEUR Container Comments
VALISE	1	

CERTIFICAT

EMPAQUETAGE
Packing

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 40

POIDS EXPÉDIÉ / Weight Shipped : 12,28

QUANTITÉ RESTANTE / Quantity Remaining : 0

POIDS RESTANT / Weight Remaining : 0,00

CERTIFICAT

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 40

POIDS EXPÉDIÉ / Weight Shipped : 12,28

Signature:

Date:

EXPÉDIÉ LE / Shipped On : 2017/02/17

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
317043	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
35257	N/A	A2		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

VAC HARDEN

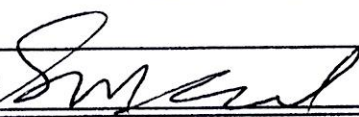
HARDEN AND TEMPER

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	58 - 62 HRC	5	61 - 62 HRC

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
40	12,28	646.3013 (10) 646.3013 155508 (8) 646.3344 155621 (6) 646.3315 155385 (6) 646.3316 155368 (10) 646.9711 155350 1 VALISE

21 Feb

COMMENTAIRES / comments

APPROUVÉ par / Approved by: 		DATE: 2017-02-17
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METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
317043	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM	
35257	N/A	A2			
<u>SPÉCIFICATIONS DU PROCÉDÉ</u> processing specifications					
VAC HARDEN					
HARDEN AND TEMPER					
EXIGENCE / requirement		SPÉCIFICATIONS / specified		TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS		58 - 62 HRC		5	61 - 62 HRC
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description			
40	12.28	646.3013 (10) 646.3013 155508 (8) 646.3314 155621 (6) 646.3315 155385 (6) 646.3316 155368 (10) 646.9711 155350 1 VALISE			

COMMENTAIRES / comments

VAC HARDEN 1800F, 1:30 HR

DOUBLE

Heat treatment (HT) was performed with equipment that meets the requirements of requested specification.

All HT operations were performed in compliance with the required HT specification and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with the material specification and the purchase order and was found to meet the requirements.

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Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec la spécification demandée. Toutes les opérations de TT ont été faites en conformité avec les requis de la spécification demandée et toutes les vérifications et les tests demandés ont été faites et documentés. Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec les spécifications du matériel et le bon de commande et le matériel rencontre les exigences spécifiées.

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TEMPER 400F, 2 HRS

Isabel Otero
QA Technician



FEB 17 2017